MEMORIAL OF VLADIMIR IVANOVICH VERNADSKY

TAISIA M. STADNICHENKO, *U. S. Geological Survey, Washington, D. C.*

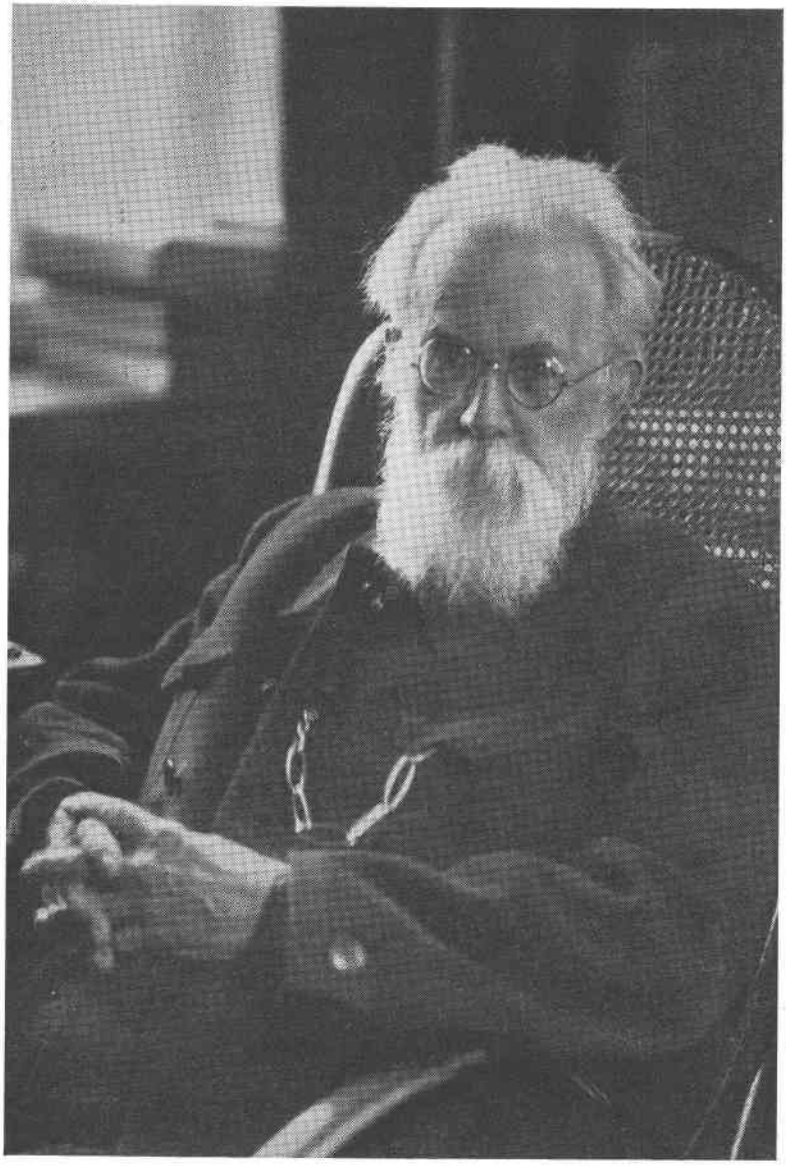
Vladimir Ivanovich Vernadsky died in Moscow on January 6, 1945, after a brief illness, only a few months before the death of his most illustrious pupil, A. E. Fersman. Born in St. Petersburg on March 12, 1863, Vernadsky studied at the University of St. Petersburg, taking chemistry under Mendeléeff and Menshutkin, geology under Inostrantsev, and mineralogy under Dokuchaev, the founder of the Russian School of Pedology (Soil Science). The latter, especially, greatly influenced Vernadsky, whose first publication "Description of geology and soils of a district in Poltava Province" was prepared under Dokuchaev's direction.

After graduation he was sent abroad in preparation for a professorship and continued his studies of chemistry with LeChatelier and mineralogy with Fouqué in Paris, and Groth, Sohnke and Haushofer in Germany.

His Master's thesis, (Moscow, 1891), was based on a study of the sillimanite group. The novel conclusions on the role of alumina led him to develop a theory on the structure of silicates which, 36 years later, was confirmed by Bragg on the basis of x-ray analyses. His Doctorate thesis (1896) on "Phenomena of gliding in crystalline substance" introduced physical interpretations in the study of crystals.

During the twenty years of his professorship in Moscow University (1891–1911) he worked in the fields of mineralogy and crystallography and built up one of the best equipped laboratories in the world, and above all taught hundreds of students, many of whom now are outstanding workers in the fields of mineralogy, geochemistry, and other allied sciences. He made many field trips to the Urals, Crimea, Caucasus, and Fergana. In teaching mineralogy he developed a new approach to minerals which he treated not as rigid entities, but as products of a definite stage of chemical processes in the earth's crust. In 1908, he begun to publish his "Essay of descriptive mineralogy." To prepare this monograph he examined all the large mineral collections of Europe, the United States, and Canada, and studied the voluminous literature in many libraries at home and abroad. This work remains incomplete, it covers only native elements, and sulphide and selenide compounds.

In 1911 Vernadsky resigned from Moscow University in protest against the reactionary policies of the Minister of Education. The Academy of Sciences in St. Petersburg, to which he was elected in 1906, became his home and his later work and life for the most part were concentrated in that Institution.



VLADIMIR IVANOVICH VERNADSKY
1863–1945

During World War I he devoted all his time to the study of radioactivity and to the organization of expeditions to Lake Baikal and Transbaikalia in search of radioactive minerals and rocks. He realized in 1915 that insufficient information was available with regard to strategic minerals and gave much of his time to the organization of a Committee for the "Study of Natural Productive Forces," commonly known as "KEPS," to which he attracted not only members of the staff of the Academy of Sciences but also geologists from the Geological Committee, Department of Mines, professors and their students.

In 1917, he became afflicted with tuberculosis and left Petrograd, first for Poltava and later for Yalta. In 1918 he became the first President of the Ukranian Academy of Science which he helped to organize and was Rector of Taurida University (1920). In 1921, when the White Armies were defeated, he left Russia and lived in France for five years. During his life in Paris he gave a seminar course on Geochemistry at the Sorbonne.

His intense patriotism forced him to return to Russia in 1926. Although in his 64th year he worked with renewed interest and was instrumental in the creation of many vital committees of the Academy of Sciences. Thus, he organized the "Committee for the Study of Meteorites" of which he was chairman, and the "Committee on the Study of Frozen Ground," the importance of which was soon realized and which became an Institute of Merzlotovedenie. The practical importance of these studies was brought to the attention of U. S. Army engineers and geologists during the construction of the Alcan Highway and military airfields and bases in Alaska in World War II. Their experience with frozen ground ("permafrost") aroused interest in the intensive Russian literature and led to the establishment of a program of field and laboratory studies.

His interest in radioactivity, which began after he heard Joly at the International Congress in Dublin in 1908, continued all his life. He organized surveys for systematic prospecting for radioactive rocks and minerals, surface and ground waters, and oil brines, but he was particularly interested in the role of radioactive elements in geology and their distribution in the earth's crust.

Vernadsky was one of the first to see clearly in advance the need for specialized studies and he possessed great ability to persuade others of the need for undertaking such studies, as shown in his organization of various committees. In June of 1940 he urged the Academy of Sciences to undertake the study of uranium minerals in connection with the problem of atomic energy and by July 25th such a committee had been organized.

An examination of his selected bibliography[1] shows the great variety of subjects which interested him. Fersman, one of his most brilliant and devoted pupils, gives[2] an interesting tabulation of Vernadsky's papers, by subject, as follows:

Mineralogy	30%
Biogeochemistry	17%
Geochemistry	16%
Radioactivity	12%
General scientific problems	12%
Crystallography	7%
Soils	3%
Strategic minerals	3%
	100%

In summing up his activities, we see that Vernadsky worked in mineralogy, crystallography, geochemistry, biogeochemistry, and radioactivity, and was interested in the history of Natural Science. Each of these presents a large field of human knowledge. In some he was a pioneer (biogeochemistry, geochemistry), in others he made valuable contributions through his creative thought and scientific work. In mineralogy he introduced new approaches and helped to develop it as a science of the chemistry and history of the earth's crust.

His last years were saddened by the horrors of German invasion, and the loss of his wife, his constant and helpful companion. Yet, to the last he maintained his deep interest in science and in the future of mankind.

In his own country he was early recognized as an outstanding scientist. In 1928 he was elected a Correspondent Member to the Mineralogical Section of the French Academy.

To all who knew him, even slightly, he will remain an ideal of a man of high purity and beauty of character and a scientist who never lost his interest in the search for knowledge.

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[1] In preparing his selected bibliography I tried to list all his important papers on mineralogy, especially those which were translated into French, German, or English.

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